

Notes on *Aedes* (Diptera, Culicidae) from Natal, with a Description of a New Species of the Subgenus *Stegomyia*

by

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The specimens described below were collected by the writer at Margate, near Port Shepstone, on the South Coast of Natal in December and January, 1949-50. The new species of *Stegomyia* is of special interest, as it is closely allied to *A. (S) simpsoni* Theobald, which is one of the proved vectors of yellow fever in East Africa. This species was very abundant in wooded valleys and ravines (dongas) of the neighbourhood and a prolific breeder in the axils of the so-called wild banana, *Strelitzia nicolai*, which appears to be its principal breeding place. *Strelitzia* is a familiar plant of this coastal area, where it is often associated with small patches of low evergreen forest, particularly in sheltered valleys. *A. simpsoni* and the new species were sometimes collected together from the axils of cultivated bananas. The preferred breeding place of *simpsoni* was, however, in the axils of *Dracena hookeriana*. The new species was found to be a more persistent daytime biter than *simpsoni*. The morphological characters of the two species are here compared in detail.

Aedes (Stegomyia) strelitziae sp. nov.

The adults resemble *A. simpsoni* in most respects, but differ in the form of the male palpi, the marking of the hind tibiae and first tarsal segment, and in the details of scutal ornamentation. The hind tibiae have a conspicuous basal white streak (beneath) which makes the species easily separable from *simpsoni*. The larva is similar to that of *simpsoni* but differs chiefly in the much shorter anal papillae (gills), the much longer antennal hair and in certain other details. The short anal papillae made it possible to separate the living larvae from those of *simpsoni* and other *Stegomyia* species (*A. aegypti* L.) collected from the same breeding place.

Male. Head: vertex with black scales, of which some on the nape are erect, together with two median lines of broad flat silvery-white scales, narrowly divided, and running into a narrow line of white scales round the eye margins. These join larger lateral patches of similar scales. Clypeus bare; tori with silvery-white scales on the inner and lower sides; proboscis dark. Palpi (fig. f) similar to *simpsoni* (fig e) in having a fairly broad,

irregular band of white scales in the centre of each shaft (incomplete beneath) and a patch of white scales near the base above; also a small patch at the bases of the penultimate and terminal segments beneath; those on each penultimate segment being more distinct than in *simpsoni* and the band on the shaft is narrower. There are a few short, stout bristles of different lengths near the apices of each shaft and penultimate segments, and two or three short bristles of equal length at the apex of each palp; but the numerous long hairs or bristles which are present on the last two segments of *simpsoni* palpi are entirely absent. *Thorax*: scutal scales all narrow with a pair of large white, roughly triangular or pear-shaped patches which reach the border of the scutum. From a short distance behind the posterior angle of these a line of white scales is continued back to the posterior border of the scutum. The patch of white scales in the centre of the anterior scutal margin is about twice as long as broad and rather less wide than that of *simpsoni*. The median pair of yellow lines, consisting of long, narrow scales and running down the centre of the scutum, diverge round the anterior part of the pre-scutellar bare space. There are, however, few or no yellow scales, and no white scales, immediately in front of the scutellum. This is in contrast to *simpsoni*, in which white scales replace the yellow ones of the median lines in front of the scutellum. The median yellow lines, which are slightly narrower than those of *simpsoni*, become very narrow or broken on the anterior half of the scutum and do not quite reach the anterior white patch. In *simpsoni* from this locality the median yellow lines are usually well defined and reach the anterior white patch. Those of *strelitzia* are therefore to some extent rather more like *simpsoni* var. *lili* Theobald. There is a fairly large patch of white scales above each wing root, and the scutellum is completely covered with broad white scales. Pleural scaling as in *simpsoni* with patches of broad flat white scales on both *apn* and *ppn*. *Legs*: front femora: all black except for a very small spot of creamy white scales on each at base beneath, and a basal white line reaching from one-third to half in front. *Simpsoni* from this locality sometimes have similar faint lines of buff scales on both sides of the front femora. Middle femora: each with a small creamy-white spot at base beneath, a white spot in front just beyond half, and a white spot at the tip, which is about as broad as long. The spot beyond half is rather smaller than on *simpsoni*. Hind femora: each with a small creamy spot at base beneath; anterior side with a creamy-white area on basal quarter followed by a creamy-white line which is confluent with a white spot or patch at half. This marking corresponds to the description of *A. (S) woodi* Edwards (Edwards, 1941, p. 133). The white spot is larger than those on the middle femora and rather rectangular on the distal side. A white spot at the tip as middle femora. Posterior side with a creamy-white area on basal quarter to one-third. Front tibiae: each with a narrow basal white band which on the male type is incomplete posteriorly. Middle tibiae: all dark. Hind tibiae: with a conspicuous cigar-shaped white basal streak reaching to nearly one-third beneath. The streak is separated from the joint at the basal end. Front tarsi: segment 1: each with a narrow basal white band (usually incomplete behind); 2: with a white band reaching

to about one third in front but shorter behind no white at all posteriorly on type specimen; 3-5 all dark with bronze gloss. Middle tarsi: 1: with a white band on basal quarter in front (less behind); 2: with a white band on basal half in front (less behind); 3-5: as front tarsi. Hind tarsi: differing from *simpsoni* in the first segment only, except that the white bands are a little shorter. Segment 1: a broad white band at base. On the type and all the paratypes this band is interrupted on the inner side by a line of long narrow dark scales which are all white on *simpsoni*; 2 and 3: with white basal bands, that on 2 being slightly shorter than on segment 1, and on 3 about the same width as 1; 4: all dark; 5: white with a black spot at tip. *Wings*: with a very small patch of short white scales at base of the costa (not present on *simpsoni*). *Abdomen*: tergites similar to *simpsoni*. Segment 1: with large lateral patches of broad silvery-white scales; 2: with a basal median white patch of a few scales (a short band or absent on some specimens) and large lateral patches; 3-6: with broad white basal bands which are well separated from the silvery-white lateral patches; these patches are roughly pear-shaped; 7: with a median basal (nearly rectangular) white patch, or a short band, or a few scales, and pear-shaped lateral patches; 8: with a large median basal white patch. Sternites: short basal white bands or patches on 3-7, and lateral white patches on 2-7, which on 7 are apical. There is also a median apical patch of a few white scales on 2. *Terminalia*: scarcely differing at all from *simpsoni*. The lobes of the ninth tergite are perhaps slightly shorter and with fewer bristles (2-4). The dorsal plates of the proctiger (tenth tergites) are darker and more pronounced, but this may be due to pigmentation only.

Female. Generally similar to the male. *Head*: with proboscis all dark, clypeus bare, etc., palpi white-tipped. Otherwise differing only in the second segments of the front and middle tarsi, which have rather more white on them, and there are sometimes a few white scales on the outer side of the fourth hind tarsal segment at the base. Claws simple in both sexes.

Pupa. Comparison with the pelts of *simpsoni* from this locality reveals only a few differences. The trumpets are similar, but the setæ of the cephalothorax and abdomen are mostly longer than *simpsoni*. Some of the pelts have a rather marked yellowish pigmentation. The abdominal setæ differ as follows: spines A on segments III and IV are stouter and on VIII, A consists of a tuft of 3-4 branches (*simpsoni* about 5), one of which is usually longer than the others and exceeds half the length of the midrib of a paddle; the branches are finely plumose and some more coarsely so near the bases. In *simpsoni* the branches are of more equal length. Setæ C of segment III are 3-5-branched (*simpsoni* single to 3-branched) and much longer and stouter. In *simpsoni* these setæ are placed behind C' which probably corresponds to the Nyasaland pelt referred to by Edwards (1941, p. 389). In *strelitziae* C' and B are almost in line (less so on the type pelt than other specimens). Other features are: dorsal seta nearly one-sixth of length of trumpet and single. L: single and M: 2-3-branched (sub-equal); H: single, shorter than T and S, and about one-quarter length of K. B on II-VII: single, those on II-V long (that on IV about half width

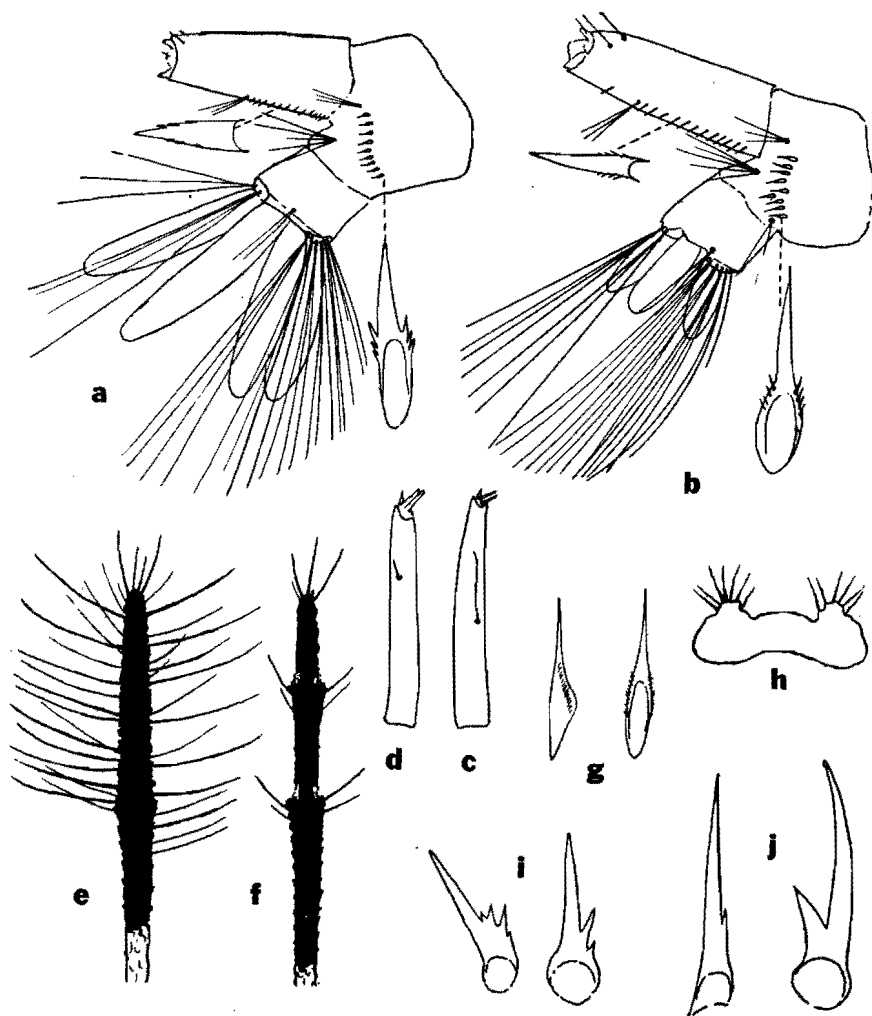


FIGURE.

A. (S.) strelitziae sp. nov: b. Terminal segments of larva. c. Larval antenna. f. Distal part of male palp from above. *A. (S.) simpsoni* Theo.: a. Terminal segments of larva. d. Larval antenna. e. Distal part of male palp (from above) showing lateral bristles. *A. (A.) bevisi* Edw.: g. Comb spines of larva (side view on left). h. Ninth tergite of male terminalia. i. Two distal close-spaced pecten spines of larva. j. Two wide-spaced pecten spines from different larvæ.

of segment). C on II and III: with 4–5 branches. C IV and V: single or 2–3-branched; C VI and VII: single. Paddles: width slightly more than length of the midrib, with denticles on distal margin. Seta: single and rather more than one-sixth length of midrib. The paddles of *strelitzia* peltis are perhaps slightly wider than those of *simpsoni* from this locality; but these *simpsoni* have wider paddles than figured by Edwards (1941, p.388).

Larva. *Head:* pale, antennae smooth and usually rather darker than head. Antennae (fig. c) differ from *simpsoni* in the much longer antennal hair which is about one-third of the length of the antenna (excluding the apical setae and papilla). The hair is situated at about half, whereas that of *simpsoni* is more distal (fig. d). The antenna of *strelitzia* is usually slightly longer than here figured. Setae A, B and C: simple and single; d: 2–3-branched and somewhat shorter than that of *simpsoni*; e: single; f: single or 2-branched. Mentum: with 11–13 teeth on each side, those at the base of the triangle being finer and closer together than in *simpsoni*. *Thorax:* spines short and straight with large bases which are usually darker than *simpsoni*. *Abdomen:* comb (fig. b) an irregular row of 7–12 (usually 8) spines which are longer than those of *simpsoni* (fig. a) and with smaller basal denticles. Siphon: paler than *simpsoni* and with rows of minute spicules; *simpsoni* has a few scattered and very minute spicules, but not in rows; the index of ten unmounted larvae varies between 2.1 and 2.6, averaging 2.3; it is almost cylindrical on the proximal two-thirds. The siphon of *simpsoni* is rather shorter, but in larvae from this locality it is less conical than figured by Hopkins (1936, p. 114), especially when viewed in a truly lateral position and particularly on the ventral side; the index is about 2. Subventral tuft of *strelitzia*: 3–4 simple branches, placed at about two-thirds and about two-thirds width of siphon in length. Pecten: varying from 9–17 spines, most of which have very fine denticles on each side; these denticles are placed nearer the base of the spine than *simpsoni* (see figs. a and b), but they may be absent from the proximal two or three spines. The most distal spine is separated from the others and usually placed beyond the tuft. The pair of dorsal setae near the apex of the siphon are longer and stouter than those of *simpsoni*. Anal segment: saddle not quite complete; upper and lower caudal setae: 4-branched; lateral seta: 2–4-branched (*simpsoni* usually single) and very minutely plumose under high-power magnification. Ventral brush: four pairs of 3–4-branched tufts. Anal papillae: upper pair about length of saddle, lower slightly shorter; on the living larvae they are more pointed than *simpsoni*.

Described from the male type and 15 paratypes, with associated peltis, selected from a large number of specimens, together with numerous larvae, many of which were obtained from eggs laid by a gravid female. Paratypes have been presented to the British Museum (Natural History), London.

***Aedes* (*Aedimorphus*) *bevisi* Edwards**

Females agree in most respects with the descriptions of Edwards (1915 and 1941). The tarsi have faint pale rings on the joints of 1–2

and 2-3 and very faint ones at the bases of 4 and sometimes on 5. On the hind legs there are creamy-white bands on the joints of the tibiae and first tarsal segments of each, which also have numerous yellow bristle-like scales on the inner side and for a short distance on each side of the joint. Most of the bristles on the middle and hind femora and tibiae are pale yellow even on the dark-scaled parts. The middle tibiae differ from the descriptions in having a small patch of creamy-white scales at the base separated from the creamy scaling on the posterior side, and the creamy scaling may extend down the posterior of tarsi 1 and 2. On one specimen the scutum has a pair of rather well-defined broad lines of brown scales passing on each side of the pre-scutellar bare space and joining large but less distinct triangular patches on the anterior half of the scutum. On another specimen the white bands of the abdominal tergites are abbreviated at the sides, so that there is only a basal median patch of whitish scales on 2-6. The brown scales on the head mentioned by Edwards (1915) are not present on my specimens.

Male: resembles the female in most respects. *Head*: palpi slightly shorter than proboscis and similar to those of *A. quasiunivittatus* Theobald and *A. dentatus* Theobald, with long hairs at the apex of the shaft and on the two distal segments. *Abdomen*: rather sparsely scaled, integument darkened at the apices of the segments and with white basal bands on tergites 2-6. *Venter*: mostly pale scaled with dark scales apically on segments 5-7. *Terminalia*: very similar to that of *A. subdentatus* Edw. (see Edwards, 1941, fig. p. 192) the only discernible differences being that the distal edge of the tergite (fig. h) curves outwards, between the lobes—in the same direction as the lobes—instead of inwards as in the other members of this group. The lobes are rather irregular in shape like *A. calignosus* Graham, but smaller than in that species; they have 6-7 bristles.

Pupa: the shape, etc., of the paddles shows affinity to *A. gibbinsi* Edwards. The integument is mainly pale, but the trumpets are dark brown and the integument is darkened on the dorsum of the cephalo-thorax and abdominal segment I. Dorsal seta: 4-6 rather fine branches which are about one-third the length of one of the trumpets. Supra alar seta single or split into 2-3 branches at about one-third. O: finely 4-branched just above base. P: single and longer than O and R. R: 3-4-branched at one-third. U: single or split into two. T: 2-4-branched and same length as K, which is single. S: single and twice as long as K. L and M: 3-4 and 5-7-branched; these are about the same lengths as U and H, the latter being single; H is about one-fifth the length of K. A on VII: 3-branched; on VIII: 3-4 dendritic branches, of which the longest is about half the length of the segment. B on II and III: single (on III about two-thirds length of segment); on IV to VI: 3-4-branched and on VII: single or 2-3-branched. C on II: 17-20 simple branches; on III: 4-7-branched and almost behind B; on IV-VII: 2-5-branched. Paddles: very much as figured for *A. gibbinsi* Edw. (Edwards, 1941, p. 397); width about two-thirds of length of the midrib and finely denticulate distally; seta: rather stout and one-seventh to one-eighth length of midrib.

Larva: Very similar to *A. dentatus* Theobald as described by Hopkins (1936, p. 149). Differs in head setæ B, which are 2-branched, and C, which are single or 2-branched; also in details of the pecten spines, length of the anal papillæ and tufts of the anal segment. *Head*: fairly pale, with a reticulum of fine denticles. Otherwise similar to *dentatus*, except setæ B and C. Antennæ spiculate with tuft of about 6 nearly simple branches one-third to half length of antenna; the tuft is placed at about half. Seta A: very finely plumose with 6–8 branches; B: 2-branched (simple); C: single or 2-branched (simple); *d*: very finely 3-branched; *e*: 2-branched; *f*: single or 2-branched. The placing of the head setæ is like that of *A. cummingsi* Theobald (Hopkins, 1936, fig. p. 151), except that *d* is a little further back (almost between B). *Thorax*: meso and meta pleural spines with 1–3 straight spines and several smaller spines, or denticles, around the bases of each tuft. *Abdomen*: comb a patch of 8 or 9 spines with a basal fringe of fine denticles (fig. g) apparently similar to *dentatus*; the spines tend to be in rows. Siphon as *dentatus*—finely denticulate with an index of 3.2 and 3.3 measured on two larvæ. Subventral tuft with 3 or 4 simple branches, less than half diameter of siphon and placed just beyond two-thirds. Pecten of 10–16 spines on basal half or less, placed close together (fig. i) and 1–3 larger and wider-spaced spines between these and the tuft (fig. j). Most of the close-spaced spines have one large basal denticle and one or two smaller denticles, but differ from *dentatus* in that the latter are on one side of the spine only. The larger wide-spaced spines may be almost straight, or curved, and simple or with one or two large or small denticles. Anal segment: similar to *dentatus* in having a nearly complete saddle with spicules in rows, single or 2-branched simple lateral seta (not very long), and a single lower caudal seta; but upper caudal seta with 6–7 simple branches. Ventral brush with about 7 paired, 5–9-branched, tufts on the barred area and 3 or 4 tufts proximal to it. Anal papillæ: lanceolate and one and a half times length of saddle, sub-equal.

Described from 3 males and 2 females with associated pelts, and two larvæ, all reared from eggs obtained from a gravid female. The breeding place is unknown, but probably a pool breeder as *dentatus* and *subdentatus*.

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